
Suisun Marsh Monitoring Program Channel Water Salinity Report

Reporting Period: March 2003

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This report is organized into the following sections and subsections:

➤ **SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT**

➤ **RESULTS**

Channel Water Salinity Compliance

Delta Outflow

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Suisun Marsh Salinity Control Gate Operation

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Factors Affecting Channel Water Salinity in the Suisun Marsh

Observations and Trends

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SUISUN MARSH MONITORING STATIONS AND REPORTING REQUIREMENT

The California Department of Water Resources (DWR) is required to provide monthly channel water salinity compliance reports for the Suisun Marsh to the SWRCB. This requirement is based on SWRCB Water Rights Decision 1641, dated December 29, 1999, and previous SWRCB decisions. Channel water salinity conditions in the Suisun Marsh are determined by monitoring specific electrical conductivity. Specific electrical conductivity is referred to in the reports as "specific conductance".

The locations of all listed stations are shown in Figure 5.

The monthly reports are submitted for October through May each year in accordance with SWRCB requirements. The reports are required to include salinity data from the stations listed below:

Station Identification	Station Name	General Location	Status
C-2*	Collinsville	Western Delta	Compliance Station
S-64	National Steel	Eastern Suisun Marsh	Compliance Station
S-49	Beldon's Landing	North-Central Suisun Marsh	Compliance Station
S-42	Volanti	North-Western Suisun Marsh	Compliance Station
S-21	Sunrise	North-Western Suisun Marsh	Compliance Station

*Throughout this report, the representative data from nearby USBR station is used in lieu of data from station C-2.

Data from the stations listed below are included in the monthly reports to provide information on salinity conditions in the western Suisun Marsh.

Station Identification	Station Name	General Location	Status
S-97	Ibis	Western Suisun Marsh	Monitoring Station
S-35	Morrow Island	South-Western Suisun Marsh	Monitoring Station

Information on Delta outflow, area rainfall, and operation of the Suisun Marsh Salinity Control Gates are included in the monthly reports to provide information on conditions that may affect channel water salinity in the Marsh.

Monitoring Results

Channel Water Salinity Compliance

State Water Resources Control Board channel water salinity standards for the Suisun Marsh were met at all five compliance stations during March 2003 (Table 1). Compliance with channel water salinity standards was determined for each compliance station by comparing March mean high-tide specific conductance (SC) with respective standards. The standard for all the compliance stations (i.e. C-2, S-64, S-49, S-42, S-21) was **8.0** mS/cm during March 2003. Table 1 lists monthly mean high-tide SC at the compliance stations.

The progressive daily mean SC for each station is used to track salinity conditions during each month (Figures 1). The progressive mean is calculated for each compliance station. The progressive daily mean (PDM) is the mean of daily average high-tide SC of the month. The mathematical equation is shown below. New progressive mean calculations begin at the start of each calendar month.

$$\text{PDM} = \frac{\sum \text{daily average of high tide SC}}{\text{\# days of the month}}$$

Delta Outflow

At the start of March, Delta outflow was around 20,000 cfs and decreased to about 7,400 cfs on March 12, 2003. Due to a high precipitation event on March 12 which resulted in high river flows, Delta outflow peaked at about 37,000 cfs on March 18. Thereafter, it decreased and ended the month between 10,000 and 15,000 cfs. The monthly mean Net Delta Outflow Index (NDOI) for March is listed below:

Month	Mean NDOI (cubic feet per second)
March	15,847

The NDOI is the estimated average daily rate of outflow from the Delta.

Rainfall

Total monthly rainfall at the Waterman Gauging Station in Fairfield during March 2003 is listed below:

Month	Total Rainfall (inches)
March	2.00

Suisun Marsh Salinity Control Gate (SMSCG) Operations

Operations and flashboard/boat lock installations at the SMSCG during March 2003 is summarized below.

Date	Gate status	Flashboards status	Boat Lock status
March 1-31	3 gates open	Installed	Closed

All three gates continued to be open due to low water quality levels in the marsh during March. The flashboards remained installed in the event that gate operation is needed to control salinity in the coming control months.

Discussion

Factors Affecting Channel Water Salinity in the Suisun Marsh

Factors that affect channel water salinity levels in the Suisun Marsh include:

- delta outflow;
- tidal exchange;
- rainfall and local creek inflow;
- managed wetland operations; and,
- operation of the SMSCG and flashboard configurations.

Observations and Trends

Conditions during the Reporting Period

Salinity levels at all compliance stations did not exceed 3.0 mS/cm on the eastern portion (Figure 1) and no higher than 5 mS/cm on the western portion (Figure 2) of the marsh throughout March. A large precipitation event on March 12, 2003, resulted in high runoffs around mid-March, kept salinity level throughout the entire marsh well below the standard of 8.0 mS/cm.

Channel water salinity conditions in the Marsh were mainly influenced by continued precipitation in the second half of March 2003 and coming into March with low water quality levels. SMSCG operations ceased on December 31, 2002, so gate operations was not a contributing factor to lower salinity levels in March. Compared to February 2003 monthly outflow (i.e. 28,707 cfs), March 2003 was only about half that amount. The overall salinity level in the Marsh was low for March.

Comparison of Reporting Period Conditions with Previous Years

Monthly mean high-tide SC at the compliance and monitoring stations for March 2003 were compared with means for those months during the previous nine years (Figure 4).

Means salinity pattern of all compliance and monitoring stations for March 2003 was similar to that of March 2002, however, lower in magnitude. Compared to previous nine years, March 2003 salinity levels were ranked second in high Specific Conductance, except for Collinsville station. For March 2003, Collinsville station was ranked fourth in high water quality.

Table 1**Monthly Mean High Tide Specific Conductance at Suisun Marsh
Water Quality Compliance Stations****March 2003**

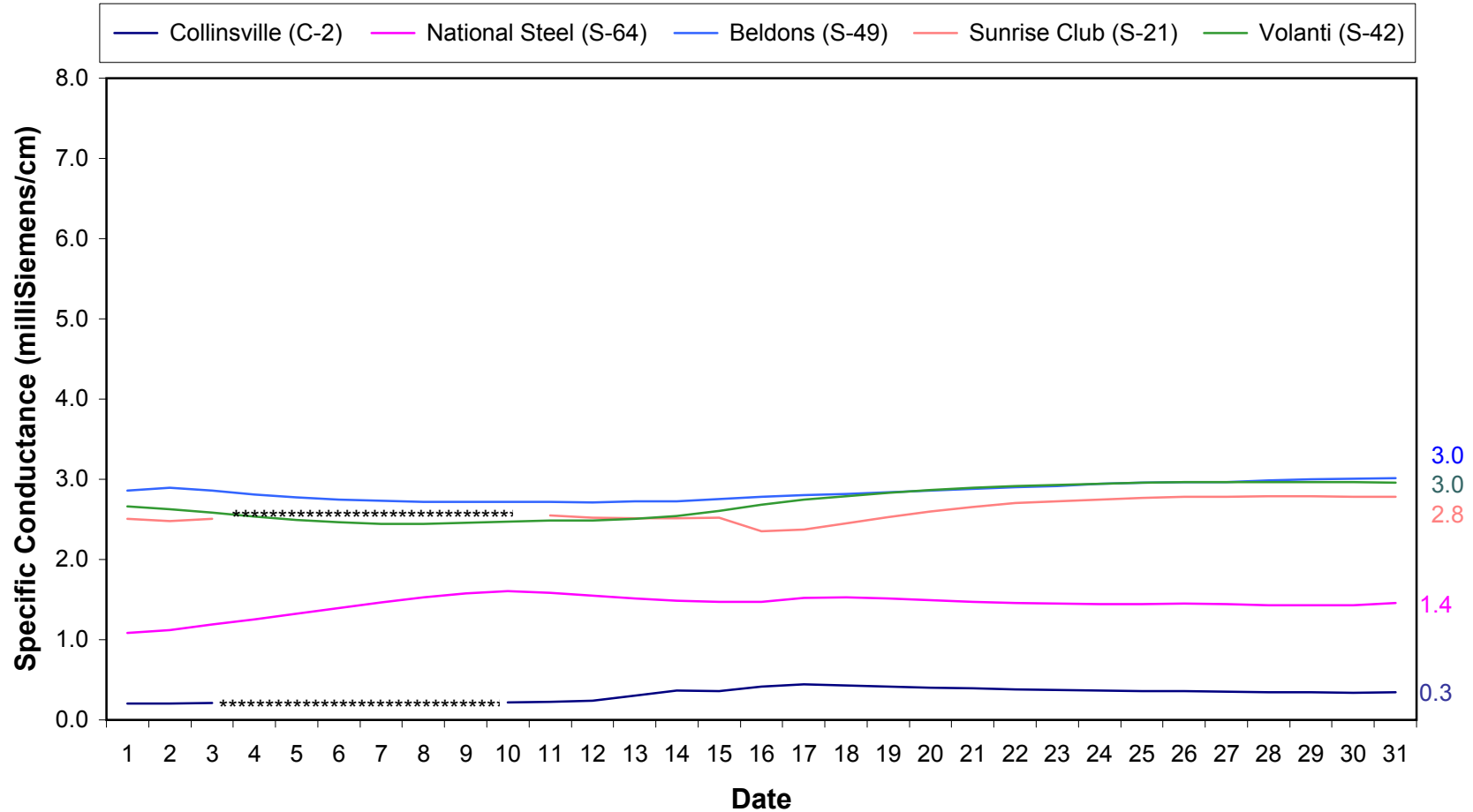
Station	Specific Conductance (mS/cm)*	Standard	Standard meet?
C-2**	0.3	8.0	Yes
S-64	1.5	8.0	Yes
S-49	3.0	8.0	Yes
S-42	3.0	8.0	Yes
S-21	2.8	8.0	Yes

* = milliSiemens per centimeter

**The representative data from nearby USBR station is used in lieu of data from station C-2.

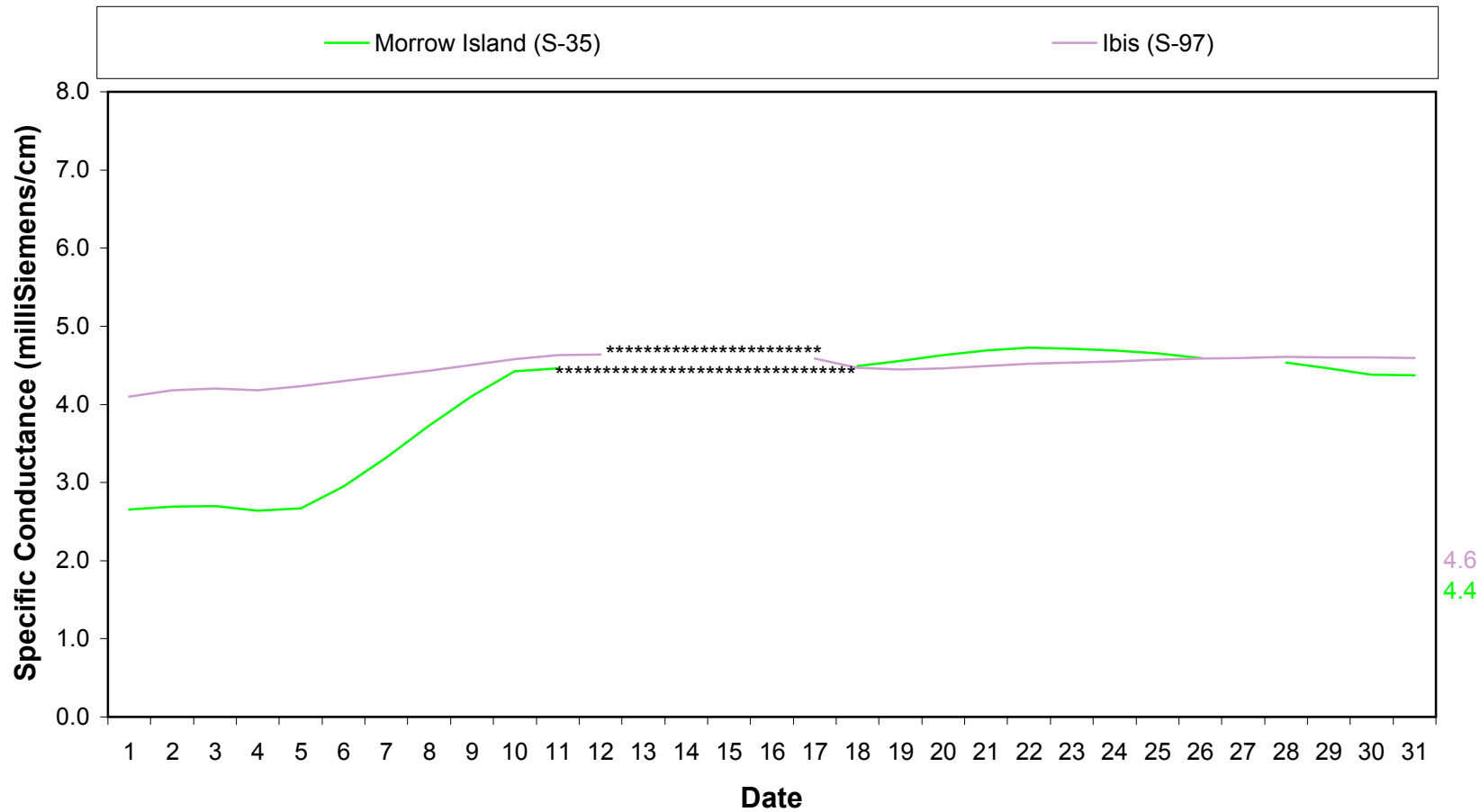
**Figure 1. Suisun Marsh Progressive Mean High Tide Specific Conductance
For Compliance Stations
March 2003**

Standard = 8.0 mS/cm



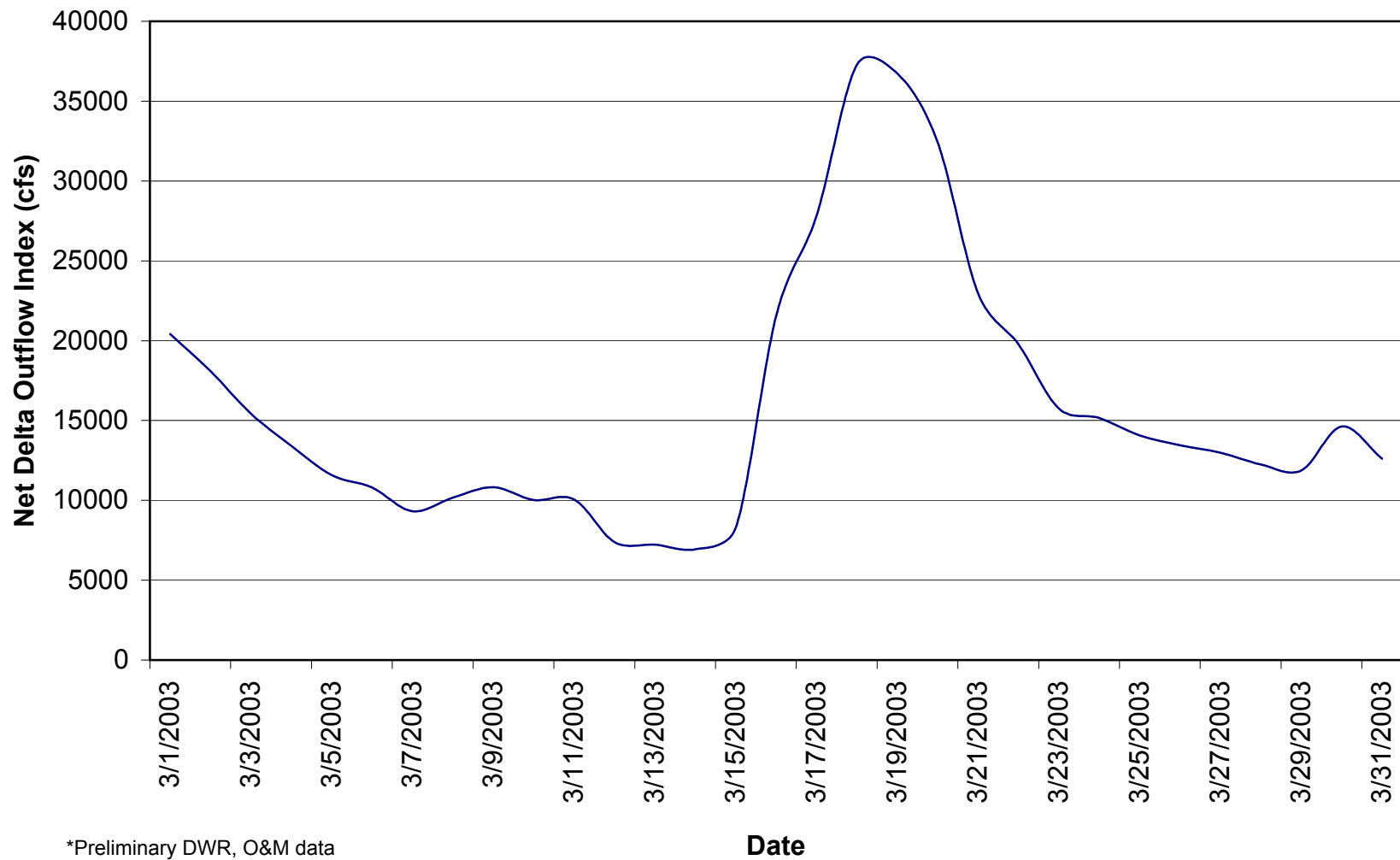
** = missing data due to equipment failure or did not pass QA/QC

**Figure 2. Suisun Marsh Progressive Mean High Tide Specific Conductance
For Monitoring Stations S-35 and S-97
March 2003**



* * = missing data due to equipment failure or did not pass QA/QC

**Figure 3. Daily Net Delta Outflow Index For
March 2003***



**Figure 4. Monthly Mean Specific Conductance at High Tide:
Comparison of Monthly Values for Selected Stations
March of 1994-2003**

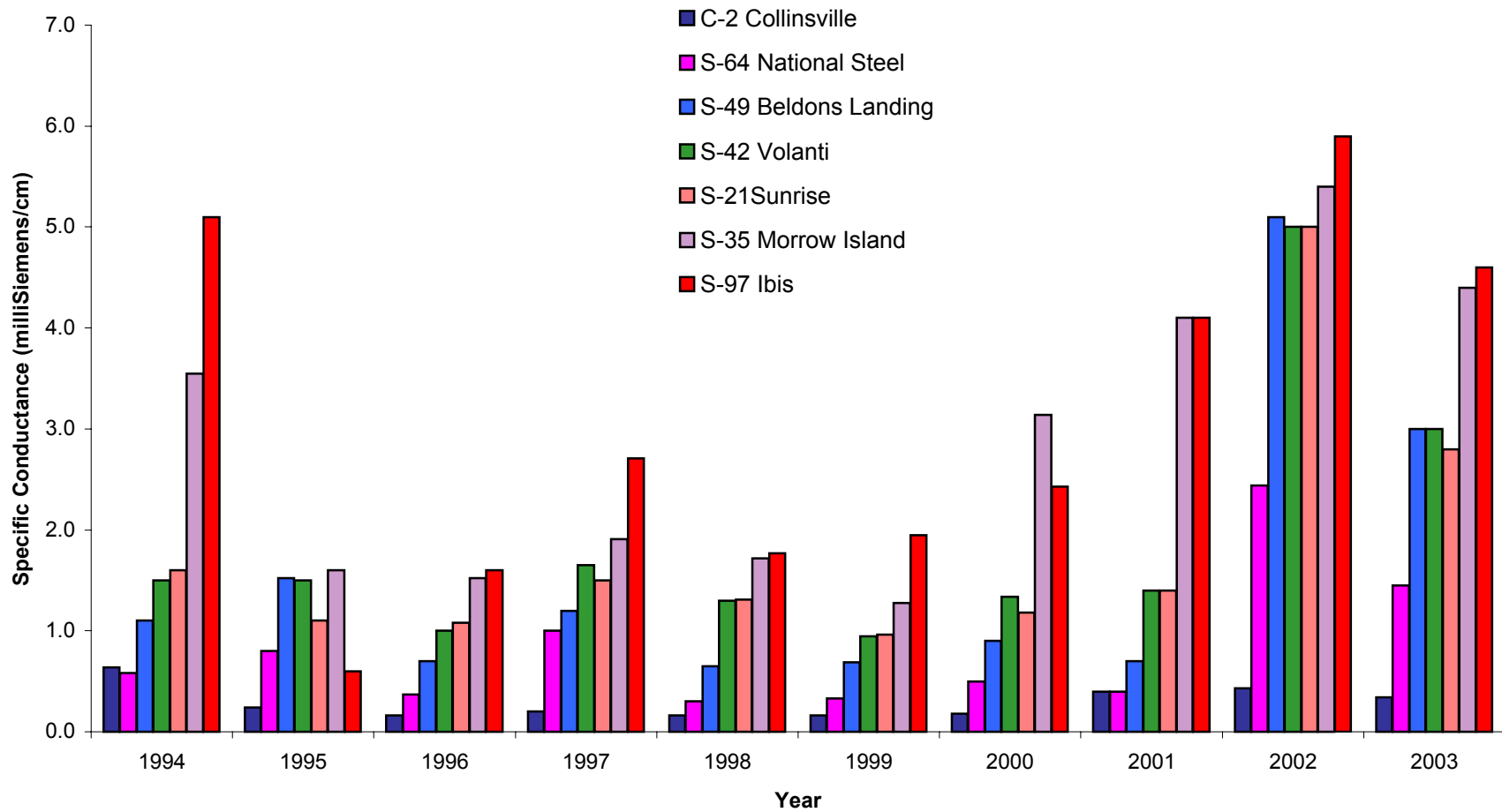


Figure 5

